

Vouchers for Improving Sanitation: A Step toward Stopping Open Defecation

Wendee Nicole

<https://doi.org/10.1289/EHP11544>

Eliminating open defecation by 2030 is one of the United Nations' Sustainable Development Goals.¹ As of 2020, more than 494 million people worldwide routinely defecated outdoors instead of using a toilet.² This represents a sharp decrease from the 1990 estimate of 1.3 billion people,³ but it is not clear whether further sanitation improvements can be achieved or sustained, especially by poor and vulnerable households.⁴ A new study reported in *Environmental Health Perspectives*⁴ investigated how providing durable toilets to vulnerable Ghanaian households would affect communities' "open defecation–free" (ODF) status.

ODF status is achieved when a community has no evidence of open defecation and 80–100% of households—depending on the country—own and use toilets.² A strategy called community-led total sanitation (CLTS) is used to help attain ODF status.⁵ This method involves triggering feelings of shame and disgust about a community's level of visible defecation in order to motivate people to build and use toilet facilities.⁵ Although there is evidence that CLTS prompts people to discontinue open defecation initially, its long-term effectiveness for maintaining sanitation is less certain.⁵ One reason is that toilets are expensive to construct and maintain. People with limited income typically build latrines with unlined pits, mud walls, and squatting platforms.⁵ If these structures collapse, residents often return to open defecation.⁶

The new study included more than 5,000 households in 109 randomly selected communities in the Tatale and Kpandai Districts of

Northern Ghana. Prior to the study, these communities had achieved ODF status through implementation of CLTS, although not all had maintained that status. Fifty communities were assigned as controls. The remaining 59 were assigned to the subsidy group, where vulnerable households received vouchers to purchase a latrine substructure. Personnel from the District Assemblies (planning bodies) consulted with each community to identify families that were food insecure or included a vulnerable person with no outside support. These households represented 14% of the subsidy group.

"A main goal of the subsidy program was to encourage installation of the more durable facilities that were provided through the vouchers," says lead author John Trimmer, deputy director of research at the nonprofit Aquaya Institute. "Along with supporting the most vulnerable members of the community, there is also often a hope that subsidizing a portion of the population could encourage other, less vulnerable households to improve their own toilets as well." However, Trimmer adds, "We did not see much evidence of that in this case."

ODF status declined substantially throughout the 21-month duration of the study in both subsidy and control communities. Although most of the durable toilets built after receiving a voucher remained in place at the end of the study, less durable latrines installed or maintained during the prior CLTS intervention had largely collapsed and were not replaced during the study period.



Eligible households redeemed their vouchers for one of three types of durable latrine substructures: (clockwise from left) the plastic Digni-Loo slab and liner, a molded concrete slab and liner, or a cement block liner and poured concrete slab. Residents were responsible for digging the pit and building a shelter around the latrine. Images: Courtesy The Aquaya Institute.

“We did not expect to see these extremely high levels of toilet collapse and deterioration among our study population,” says Trimmer. “Based on what we know from the literature, sanitation conditions may sometimes decline after communities have reached ODF status, but declines are typically not as bad as what we saw during this study in Northern Ghana. I think that unstable soil conditions in the region likely played a role in why toilet collapse was so common here.”

By the end of the study, open defecation in control communities had increased from 25% to 69%, whereas in communities that had received vouchers it increased from 25% to 54%. Only 15% of households in subsidy communities and 1% of control households owned and used durable toilets.

“Overall, the program’s effects did not outweigh the general deterioration in sanitation conditions across the study population,” says Trimmer. “Although the program did improve conditions for households that received vouchers, as well as for others living in the same compound who were sharing the subsidized toilets, it did not lead many noneligible households to purchase and install their own durable facilities.” He speculates that, given the relatively high poverty levels in this region of Ghana, durable toilets may still be too expensive for most noneligible households.

Esi Awuah, a professor of civil engineering at Kwame Nkrumah University of Science and Technology in Ghana, says even concrete-lined pits can collapse. “The people want strong and stable toilets,” says Awuah, who was not involved in the study. “One can do *in situ* measurements of the slabs as well as the lining of the pits. For me, safety is very important, and we should look not only at the toilet technology but also the structural stability.”

“This is a carefully designed and well-executed study,” says Raymond Guiteras, an assistant professor of agricultural and resource economics at North Carolina State University. “The paper shows that gains in sanitation coverage from a successful CLTS program deteriorated significantly over time. This calls for innovative ideas to sustain and build on gains achieved from an initial intervention.”

Guiteras, who was not involved in the study, adds that the study’s test of one such idea—subsidizing durable toilets for the poorest of the poor in these communities—did find some modest success. Overall, he says, the paper supports the idea that multiple interventions to improve sanitation are needed at the household and community level to make sustained progress. “Rather than one breakthrough solution,” he says, “this is likely to be a long struggle with slow improvement from the cumulative benefits of many incremental gains.”

Wendee Nicole is an award-winning San Diego-based science and environmental journalist. Her work has also appeared in *Nature*, *Defenders of Wildlife*, and other publications.

References

1. United Nations. 2019. ‘Transformational benefits’ of ending outdoor defecation: why toilets matter. UN.org, UN News, Health section, 18 November 2019. <https://news.un.org/en/story/2019/11/1051561> [accessed 10 June 2022].
2. WHO (World Health Organization). *Progress on Household Drinking Water, Sanitation and Hygiene 2000–2020. Five Years into the SDGs*. UNICEF. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene. <https://www.unwater.org/app/uploads/2021/07/jmp-2021-wash-households-LAUNCH-VERSION.pdf> [accessed 10 June 2022].
3. World Health Organization (WHO), United Nations International Children’s Emergency Fund (UNICEF). 2015. *25 Years Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment*. https://data.unicef.org/wp-content/uploads/2015/12/Progress-on-Sanitation-and-Drinking-Water_234.pdf [accessed 10 June 2022].
4. Trimmer JT, Kisiangani J, Peletz R, Stuart K, Antwi-Agyei P, Albert J, et al. 2022. The impact of pro-poor sanitation subsidies in open defecation-free communities: a randomized, controlled trial in rural Ghana. *Environ Health Perspect* 130(6):67004, PMID: 35674667, <https://doi.org/10.1289/EHP10443>.
5. Venkataramanan V, Crocker J, Karon A, Bartram J. 2018. Community-led total sanitation: a mixed-methods systematic review of evidence and its quality. *Environ Health Perspect* 126(2):026001, PMID: 29398655, <https://doi.org/10.1289/EHP1965>.
6. U.S. Agency for International Development. 2018. *An Examination of CLTS’s Contributions Toward Universal Sanitation*. <https://www.globalwaters.org/sites/default/files/washpals-examination-of-clts-contributions-toward-universal-sanitation.pdf> [accessed 10 June 2022].